

16  
PUBLIC HEALTH ACT,

(11 & 12 Vict., Cap. 63.)

REPORT

TO THE

GENERAL BOARD OF HEALTH,

ON A

PRELIMINARY INQUIRY

INTO THE SEWERAGE, DRAINAGE, AND SUPPLY OF  
WATER, AND THE SANITARY CONDITION  
OF THE INHABITANTS

OF THE TOWN AND PARISH OF

F A R E H A M.

BY

ROBERT RAWLINSON,

SUPERINTENDING INSPECTOR.



LONDON:

PRINTED BY W. CLOWES & SONS, STAMFORD STREET,

FOR HER MAJESTY'S STATIONERY OFFICE.

1849.

## NOTIFICATION.

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THE General Board of Health hereby give notice, in terms of section 9th of the Public Health Act, that on or before the 30th June written statements may be forwarded to the Board with respect to any matter contained in or omitted from the accompanying Report on the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants of the Town and Parish of FAREHAM, or with respect to any amendment to be proposed therein.

By order of the Board,

HENRY AUSTIN, *Secretary.*

*Gwydyr House, Whitehall,*

*May 26, 1849.*

**FAREHAM.**

**PLAN**  
*of the Town of*  
**FAREHAM and WALLINGTON.**  
*Shewing the proposed area for the purposes of the Public Health Act.*



Scale.







PUBLIC HEALTH ACT (11 and 12 Vict., cap. 63).

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*Report to the General Board of Health on a Preliminary Inquiry into the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants of the Town and Parish of FAREHAM.* By ROBERT RAWLINSON, Superintending Inspector.

MY LORDS AND GENTLEMEN,

*Fareham, Hampshire.*

IN accordance with instructions received from your Board, and by the powers of a petition from "more than one-tenth of the rated inhabitants," I commenced a public inquiry, at ten o'clock in the forenoon on Monday, December 18, 1848, in the hall of the Fareham Institution, and received in public such evidence as was tendered to me on the general sanitary condition of the town and adjoining district, in the presence of Rev. Wyndham C. Madden, vicar, Mr. William Case, surgeon, Mr. J. O'Brien, captain, R.N., Mr. William Barnard, Mr. John Blatherwick, surgeon, and others.

Having ascertained from Mr. William Case, that the notices as required by the Act, had been duly posted and advertised, I read over the published advertisement which set forth the object of the inquiry, as also such portions of my instructions as referred to the method in which I must conduct it.

There were several of the ratepayers and owners of property present who objected to the inquiry on the ground that they thought the petition had not been fairly got up, as also that the application of the Act would be pecuniarily burdensome and oppressive. They had also, amongst themselves, made or obtained an extravagant estimate for a system of sewers, such as they conceived to be required. A main sewer, five feet in height and three feet in breadth, to be turned in brickwork, had been calculated for, having branch sewers and drains of corresponding proportions. This is worthy of serious remark and consideration, as it is a fair index to the character of work likely to be undertaken and carried out in towns where the local authorities are determined to rely solely on their own judgment. Works extravagantly schemed and as extravagantly estimated, necessarily impede improvement. Fareham, without a sewer, must needs have one large enough for ten such towns, or for twenty times the area requiring to be drained. It

will, however, be seen by the evidence of the opponents, which is quoted at page 6, that they acknowledged the great need there is for improvement; and if it can be accomplished "cheaply," they will most willingly pay the cost of the work. A petition was presented by Mr. J. O'Brien (signed by some of these ratepayers) against the inquiry.

This petition I received and placed on the table, but at the same time I explained to the gentlemen that they were labouring under a false impression as to the cost of the proposed new works, either in forming new sewers and drains, or in furnishing a supply of water. I then proceeded with the enquiry by receiving the evidence of such of the ratepayers and local officers as were present. I did not consider it necessary in any instance to administer an oath. When Mr. Clarke had concluded his evidence, Captain O'Brien begged to withdraw the petition, which, at the commencement of the proceedings he had presented against the inquiry. This petition was, however, forwarded to London after an interval of several days.

Mr. James William Blackman, land surveyor and Surveyor of the Board of Highways, deposited a plan of the town, with sections through the principal streets. I also received every attention and assistance throughout the inquiry and during my personal inspection of the town and district from him. Mr. Blackman has also since the inquiry forwarded me ground-plans and sections of several blocks of cottage property, showing the relative position of houses, privies, middens, and wells, with the depth figured, at which the water is retained in the wells.

An abstract of the evidence given at the inquiry by the persons who petitioned for the application of the Act, and those who opposed it, is given as the best and fullest statement of the present condition of the town. I have also added an abstract of my own notes made during a personal inspection of the district.

FAREHAM, a market town, parish, hundred, and union, in Portsdown division of Southamptonshire. Acres of the parish, 6,670; houses, 814; A. P. 21,088*l.*; population in 1801, 3,030; in 1831, 4,402; in 1841, 3,253 males; 2,915 females; total, 6,168.

Poor-rates in 1838, 1611*l.* 8*s.*

A workhouse has been erected here by the Poor Law Commissioners for the Union of Fareham, capable of accommodating 300 persons. The Fareham Poor Law Union comprehends nine parishes, with an area of fifty square miles; population in 1831, 12,137.

DESCRIPTION OF THE TOWN.—The town of Fareham stands on a slightly elevated ground, rising towards the north; it is situated at the north-west extremity of the harbour of Portsmouth, 11½

miles south-east of Southampton, and 73 miles south-west of London.

The Gosport and Southampton Railway passes through Fareham common, where there is a tunnel. The town is lighted with gas. There is a considerable manufacture of pottery, and a good trade in corn, coals, and timber. Ship-building is carried on.

The main street of Fareham, "West-street," is broad and open, lying almost due east and west. High-street is at its eastern end, and turns up almost due north, giving to the plan of the town the form of the letter L. Trinity-street passes out of West-street in a northerly direction, and East-street is in a line with West-street, beyond the junction of High-street; Park-lane, Quay-lane, and Portland-street, lead out of West and East-streets in a southerly direction down to the harbour. The position of the town is very favourable for natural ventilation, and may be easily drained, as the fall of the land is gradual and tolerably equal from the north to the south.

**GEOLOGICAL CHARACTER OF SITE.**—The geological character of the site is London clay, forming the bed and margin of Portsmouth harbour. It rises or "crops" to the surface, almost in a line with West-street, where it is overlaid with a diluvial deposit of flint and chalk-gravel, which is continued for some distance inland up to the outcropping of the lower chalk. This diluvial deposit is very porous, and from being constantly full of water evidently lays in a basin of the clay underneath; as, during rainfall, much of the surface-water is absorbed on the northern or higher side of the town, passes down to the clay, and rises to the surface where the clay and gravel "crop out;" and as this takes place for a considerable distance along the line of West-street, the road is constantly wet and tender; so much is this the case that the surveyor says, "The main street is more like a ditch than a road, and it costs more to keep one half-mile of this in repair than two miles of the turnpike road outside."

**PLAN OF STREETS.**—The streets are not laid out according to any pre-arranged plan, neither are the houses built in any regular order; but each person builds as may suit his own convenience and the form of his land; the town is not, however, particularly crowded, neither are there many closed courts, but in general the houses may be considered in a favourable position for ventilation, although many of them are in as bad a sanitary state as they possibly can be in all other respects.

**MATERIAL USED IN BUILDING.**—The material principally used for building is brick, which has the character of being good in quality, although porous and absorbent, though probably not more so than brick in general. Some of the cottages are built, partially



of brick, and partially of wood; the ground floors to the cottages are commonly of tile.

**WATER SUPPLY.**—There is no general system of water supply; but, as the site on which the cottage property stands is saturated with water, it is readily reached by wells; and in many instances the water stands in such wells within eighteen inches of the level of the floors adjoining; and as cesspools are common, the water is tainted, so as to be unfit for use other than for washing purposes; that is, the inhabitants stated they could only use it for this purpose. Their water for drinking and cooking has to be fetched from some pumps sunk to a greater depth and situated at more distance from cesspools. The whole of the water is very hard and consequently wasteful and otherwise expensive.

*Mr. Charles Batchelor*, chemist, says:—

“In the densely populated localities there are water-closets and wells close together. All impurities which are soluble will pass through the ground. The fact of water being bright is no test of its purity. I have no doubt the cesspools vitiate the wells. At the corner of High-street the well cannot be more than 20 yards from the privies. The next house has an overflow-pipe from the cesspool, and this creates at times a horrible smell; I live near, and have at times to shut my door to prevent it entering the house. The next house, the well and cesspool are within three feet of each other, and the occupier of this house is very much annoyed by the next-door cesspool percolating through his kitchen-wall; he has been at considerable expense to prevent this, but has failed. The next party has a well and cesspool within nine feet of each other; these parties have no other water to use for household purposes.”

*Mr. William Pink* states upon this subject:—

“My well is situated about 9 feet from the cesspool, and it is about 20 feet deep. Our water was in such a state about four years ago that we could not drink it; we opened the well, and then discovered streams of putrid matter from the cesspool. I went to considerable expense in puddling up this, to cut off the soak; it cost about 4*l.*; it is not effectual. I would rather buy water than drink our own water. When we opened the site the gravel was as black as your hat. I have no power to make a drain, or I would gladly do so. We are annoyed during wet weather with springs which ooze up through the floor.”

*Mr. Thomas Kelsall*, solicitor, says:—

“With regard to water, the supply is very deficient; indeed, in summer, I have two wells on my premises; one is generally completely exhausted, and the other nearly so. I supply my neighbours as long as I can, and then I go begging myself; and from the same cause—want of water—our roads are very inadequately watered, and at an increased expense.”

**SEWERS AND DRAINS.**—There is no general system of sewers or drains; in fact, sewers there are none, and the few drains which



have been made have no connexion with each other; they are imperfect in form, and quite useless for all practical purposes; open ditches receiving the refuse of the privies and houses are the rule: these are common all over the town, and they are stagnant and foetid to a degree which renders them highly offensive and dangerous to health, producing and maintaining a continuance of fever. Several drains pass into the river at the quay, but they are totally inadequate for the purpose of perfect drainage. There is no regulation to compel the cleansing of drains, cesspools, or ditches other than that recently brought into operation by the Removal of Nuisances Act; and the carrying out of this Act frequently (notwithstanding the precautions issued by the Board against "ill-considered and rash modes of cleansing") for the time increases the nuisance and danger, by exposing a greater surface of matter in a state of putrescence; and without a system of water supply and sewerage this must be the constantly recurring condition, in these respects.

*Mr. Blackman*, the surveyor, states:—

"The drains in general are on the surface, and are all manner of forms and shapes, being put in without any regularity. Trinity-street has a pipe-drain nine inches in diameter, but it does not answer the purposes intended, it does not take all the water; none of the present drains make a complete drain, one turns one way and another turns another, but there is no connexion from one end of the town to the other."

*Mr. James Thresher* states:—

"A few years since we wished to drain our premises, and two or three of our neighbours joined in this wish, and strove to do it by common subscription, but we were prevented from doing so by other parties not consenting to join us in the expense; this prevented the proposed arrangement being carried out. From the top of High-street to the bottom, most of the drains run into an open gutter, and in summer it is most offensive; a common sewer would be highly desirable for the whole of this property."

On the subject of the present drainage, *Mr. Henry Clarke* states:—

"I am an extensive owner of property in this town. In West-street I hold property, which is well drained; I have two houses in other parts, which are also well drained; I bring the drains through the house; they are brick drains, covered with stone; they pass into what we call a common sewer. I have a water-closet in my own house, which passes into a cesspool, and there is an overflow from it; this passes into a drain—a main drain, in Quay-lane. I should say the drains would not take all the refuse from the houses if turned in; they were never made for that purpose; they were made to take away the surface-water. There is no continuous common sewer through the town; there is no system of house-drainage. We have no power to compel parties to make a perfect drainage. By subscribing a few hundreds we could do it all without you gentlemen; we are afraid of the very heavy expense, and would be glad to have these improvements if they could be done cheaply, or by subscription. I am afraid the ex-

pense will far exceed the sum you have stated. I should be very willing to have the improvement carried out if it would not cost more than you have stated; that is, 2*d.* per week for water, and 2*d.* per week for sewage."

This is an encouraging feature. The bitterest opponent to the measure will gladly pay the maximum charges allowed by the Act for the works proposed, and the estimate shows a gain to the town at one-third this charge.

**ROADS AND STREETS, HOW FORMED.**—The surface of the roads and streets are principally formed of flint-gravel or macadam, and are neither cleansed nor watered with regularity.

Few of the courts, passages, or narrow streets in front of the cottages have any complete pavement or even surface channels, but exist in a broken and imperfect state, unequal, full of holes, and affording lodgment to all the refuse generated by wear, and such as is thrown out of the houses.

**PLAN OF COTTAGES.**—The cottages are generally built in rows or courts, consisting of one living-room about twelve feet square, and one bed-room over it; some have, on the ground-floor, a small room which is used as a wash-house or scullery, and the window from this room frequently opens over the stagnant ditch which is immediately behind and in contact with the wall of the house.

The cottages are generally let singly, at rentals varying from one shilling to three shillings per week. 401 houses in Fareham and Wallington pay no poor or other rates, but are ranked in what is termed the "excused list." This is nearly half the number of houses in the town. It is 401 to 413. Mr. Blackman furnished the following list of houses in Fareham and Wallington districts, showing the "excused list."

A TABLE of the Number of Houses in the TOWN of FAREHAM, showing the presumed Rental, obtained by adding 33½ per cent. on the gross estimated Rental in the Rate-Books.

*List of Houses Rated.*

		No. of Houses.
£5 and under	.	6
5	£10	101
10	20	128
20	30	48
30	40	25
40	50	20
50	60	18
60	70	16
70	80	8
80	90	5
90	100	2
100	130	8
130	185	5

Total number of houses rated . 390

*List of Houses "Excused."*

	No. of Houses.
£5 and under . . . . .	71
5 ,, £10 . . . . .	240
10 ,, 15 . . . . .	1
15 ,, 20 . . . . .	1

Total number of houses excused . 313

WALLINGTON DISTRICT.

*List of Houses Rated.*

	No. of Houses.
£5 and under . . . . .	1
5 ,, £10 . . . . .	7
10 ,, 20 . . . . .	5
20 ,, 30 . . . . .	3
40 ,, 60 . . . . .	2
65 ,, 85 . . . . .	3
*225 ,, 230 . . . . .	1
†240 ,, 245 . . . . .	1

Total number of houses rated . 23

*List of Houses "Excused."*

	No. of Houses.
£5 and under . . . . .	33
5 ,, £10 . . . . .	54
10 ,, 15 . . . . .	1

Total number of houses "excused" 88

*Abstract of Lists.*

Number of houses rated in Fareham . . . . .	390
Number of houses rated in Wallington district . . . . .	23

Total number in both districts rated . 413

Number of houses "excused" in Fareham . . . . .	313
Number of houses "excused" in Wallington district . . . . .	88

Total number in both districts "excused" 401

Houses rated . . . . .	413
Houses "excused" . . . . .	401

Total number of houses in Fareham and Wallington } 814

Upon what principle these "excused lists" are sanctioned I have not been informed; but, in carrying out the new works, all must pay a just and fair proportion of the rate, unless one-half the house-owners will voluntarily bear the cost of work to be done on

\* House and brewery.

† House and tan-yard.



that property most in need of improvement. The General Board will not sanction the smallest outlay not absolutely required, and such as will not add to the value of the property so improved: the capital required may be borrowed on the security of the rates, and to make these as light as possible they should be general. There is no real advantage in an "excused list" if the property and people so excused are left in utter neglect.

*Mr. John Blatherwick, surgeon:—*

"The cottages have not the means of carrying out good sanitary regulation. I am convinced this want of sanitary regulation has considerable effect on the health of the inhabitants. I can instance two houses where they have the privies within doors. The greatest amount of disease exists where there is the greatest amount of dirt; they are cause and effect. There have been some bad cases of fever lately, as much as nine cases in one house—all but putrid fever. Persons may not have the disease generated upon the spot, but dirt will always prevent recovery as well as generate it."

**SLAUGHTER-HOUSES.**—There are five slaughter-houses; three in West-street, one in High-street, and one in Trinity-street. They are closely surrounded with the neighbouring houses, and stand generally in the densest-built parts of the town; there is no drainage from them, but they have all dung-heaps adjoining.

**GAS-WORKS.**—The town is lighted with gas, at a cost of 10s. per 1,000 feet;\* the gas is manufactured by a private company. There was a strong opposition to the establishment of the works, and the Company were compelled to construct them at a distance, and at a considerable elevation above the general level of the town. This has been found a great disadvantage, and has added something to the cost of the manufacture, which has been charged most heavily upon the consumers.

There are no public baths in the town, but a bathing-house has been erected on the margin of Fareham lake, which is very little used.

**PUBLIC WALKS.**—There are no public walks or recreation grounds in the possession of the town authorities; but as the situation of the town is in itself open and pleasant, these conveniences would scarcely be required if the ditches and roads in the district were properly sewered, drained, and cleansed.

**BURIAL GROUNDS.**—There are no cemeteries, other than the churchyards, and the ground attached to the parish-church is quite full.

A portion of new ground to the west of the present burial-

\* The price of gas has been reduced since the inquiry took place to 7s. 6d. per 1000 feet.

ground has been recently purchased, and is about to be added to it. The church stands to the west of High-street, and dwelling-houses have been built adjoining the yard on the east side; and it is more than probable that the extension of the town will be on the site round the church. The land to the west, and immediately in contact with the new burial-ground just purchased, is at present laid out for new streets.

Burials have taken place within the church, but the present vicar is most averse to the system, and does not intend to allow any additional interments during his connexion with the church.

CONDITION OF SUBURBAN DISTRICT.—The land immediately in the neighbourhood is used for agricultural purposes, but it is not generally drained. Deep drainage would be of great service to many portions of it. The refuse manure of the town is at present used upon it, and sea-weed carted from the beach is mixed with the soil of the cesspools and ditches to the great annoyance of the neighbouring cottages.

With deep drains and liquid manure the yielding power of the land would be much improved.

*Mr. Case, surgeon:—*

“There are no public walks or public playgrounds. There are gas-works—a private company—seated on the top of a hill. We are imperfectly lighted; the supply is not cheap; 10s. per 1000 feet, and 4s. annually for the meter.”

There are no local Acts for paving, &c.

The inquiry in the Hall was concluded about three o'clock in the afternoon, when I proceeded with the vicar, Mr. Case, Mr. Blackman, Joseph Paddon, Esq., Mr. James Thresher, Mr. John Budd, and Captain Purvis, to make a personal inspection of the town.

#### CONDITION OF THE LOCALITIES OF DISEASE.

*Westbury-court* has an open drain behind and immediately under the windows of the houses; the tenants described it to be a great nuisance, and stated that they would like to be without it; there were two privies, with open cesspools, common to all the houses.

*Kiln's-yard* has an open surface-drain past the end of the house; there is an open midden, which drains into the foundations of houses through a small drain, partially closed and partially open.

*Kiln's-droke.*—Cottages at a rental of 2s. 6d. per week. The surface of the ground is unpaved, and most filthy; there is a small surface-drain, but it is broken, and thus rendered worse than useless. There has been a privy and cesspool just built. There is a well close to the cottages, and water within one foot of

the surface of the cottage floors; and, close to the well, is a refuse-heap, and an open cesspool within a few feet of it. The water is not fit to use, and, for drinking, the inhabitants fetch it from Mr. Kiln's yard. The privy was in a shocking filthy condition, with an open cesspool, and there is a pig-sty close to one house-end. The houses are built partly brick and timber, and are in a damp and rotten condition. The common sewer, spoken of by Mr. Henry Clarke in his evidence, is a mere surface-drain.

In *Trinity-street* a sewer, 12 inches in diameter, has been formed; but it is not capable of taking all the water during rain-fall, as it becomes choked up, and the surface of the road is then washed away. Trinity Church is drained on sufferance into some field ditches on one side of it. The owner of this land stated that "he could stop up these drains if he thought fit, and lay the church floor under water."

There are common lodging-houses in the town, but under no regulations.

There is a dung manufactory carried on by some of the cottage tenantry immediately behind their houses, and to the great annoyance and discomfort of their neighbours. Sea-weed is collected on the beach, and carted up to mix with the refuse from the cesspools. This is placed on a heap, and allowed to decay, when it gives off a most offensive, and (according to the testimony of the medical gentlemen) a most dangerous and prejudicial odour. The ground, for want of proper drains, is saturated with water up to its surface; so that wells are formed with the least cost. I saw one open well, which supplied four houses; its surface was covered with dead leaves and other dirt; it was surrounded with manure and filth in a state of decay. There are long open ditches, having the refuse of privies passing direct into them. A house was pointed out, standing in an open space of ground, but in which there had been nine cases of fever and three deaths. This house stands south of the open ditch; and, when the wind blows from that quarter, the stench is carried through the house. The south wind is generally a damp wind, and consequently is loaded with any impurities easily evaporated.

The national school stands on the outside of the town, with cottages near, looking into open fields; but they are rendered unhealthy for want of proper drainage. There are open ditches on the public road-side, which receive the refuse of the houses in the neighbourhood.

*Windmill-lane.*—Cottages here have always fever; there is an open stagnant ditch above them, into which the privies drain, and all the refuse is thrown; many of these cottages have no eaves-spouts.

*Red Lion Meadow.*—In this district there are open ditches, which receive the contents of privies. This was described in evidence



as a covered sewer, but all the material was passing over the surface, as the end of the imperfect drain was blocked up.

*Quay-lane.*—Described as having a main drain, but there exists only a surface-drain, of unequal section and dimensions, and broken for yards in length at several intervals. The section of the so-called main drain is one foot wide, six inches deep, and the bottom of drain one foot below the surface of the road.

A new parsonage house has been built for the incumbent of Trinity Church. It stands on a comparatively elevated site, open on all sides, but there are no effective drains, and the land is saturated with water; such drains as are made to convey the rain-water from the roof and yard surface pass into cesspools.

The Vicar, the *Rev. Wyndham C. Madden* states:—

“ I have not the slightest doubt but that the morals of the people would be much better if their sanitary condition were improved. There is one place, Hunt’s yard, with one privy only; this is inhabited by prostitutes and other loose characters. I generally find that vice and bad sanitary regulations are connected.”

*Mr. William Barnard* says:—

“ I am personally acquainted with the cottages in the town of Fareham; there are parts of the town in which fever is common. The number of sick people this year has been about 500, out of a population, in round numbers, of 6000; the prevailing forms of the complaints are such as would arise from bad drainage, and a damp vitiated atmosphere. There are constantly complaints from the poor tenants on the state of their houses, and the dirt about them.”

The evidence of the medical gentlemen as to the cause of fever and other diseases of that class is clear and distinct. Mr. John Blatherwick states, “ The greatest amount of disease exists where there is the greatest amount of dirt, they are cause and effect.” Mr. James Ainge, surgeon, states, “ I feel firmly convinced that if proper sanitary regulations were carried out, the health and condition of the poor, would be improved. My opinion is, so far from a weekly cost of 3*d.* or 4*d.* per week being burdensome for water and perfect sewerage, it would be a great gain to the cottager, and a saving to the ratepayer.” Mr. W. Case points out the prevalence of fever, and read from a list, that in 1841 there were 108 cases of fever, of which 41 died. In 1848 fever was very prevalent. He says, “ I should have no difficulty in predicting where the cholera would appear.” In addition to the medical testimony, Mr. Charles Bachelor speaks of the condition and proximity of the cesspools and wells, and of an overflow pipe from a cesspool which at times produces a “ horrible smell,” and further states, “ When these cesspools have to be emptied, it must be through the house. In my own house it is so; I have had to hire another

in consequence of imperfect drainage, producing sickness in my family." Mr. William Pink, "There is no system of drainage; West-street, where I reside, the next two houses to mine have cesspools; the health of my family has suffered from this nuisance for years; the drains existing are not such as I can use, they are not sufficient to drain my house; the health of my family suffers from this state of things, and I would gladly pay for proper drains."

The annexed plans and sections show portions of the town of Fareham:—

No. 1 is a court out of Trinity-street, unpaved, and bounded by an open ditch into which all the privy refuse passes and stagnates. There are two open wells, the water in which stands about 1 foot 3 inches under the level of the cottage floors, and there is a large dung-heap within 10 feet of one well, as also a pigstye in the yard. The refuse in the ditch and the water in the well are on the same level; the stratification is porous gravel, so that the surface and ditch refuse must find its way into the wells over the surface, or through the strata.

No. 2 is a court out of Quay-lane, having an open well as shown. The surface of the yard is unpaved, and in a most filthy state. There are pigsties and privies crowded into contact with the cottages; the ground is saturated with water almost to the surface, as shown by the well; the refuse in the ditch is of the most filthy and abominable kind, and stands and stagnates within a few inches of the level of the adjoining cottage floors, and is in actual contact with some of the cottage walls.

The pink lines show how this property may be drained to a depth of 12 feet, at a cost, for 20 houses, of 80*l.*; providing a sink to each house, three yard-grates and ten waterclosets, substituted for the three privies at present in existence. This will be a first cost of 4*l.* for each house, making a rent-charge of 4*s.* per annum; or less than 1*d.* a-week for each cottage.

#### APPOINTMENT OF LOCAL BOARD.

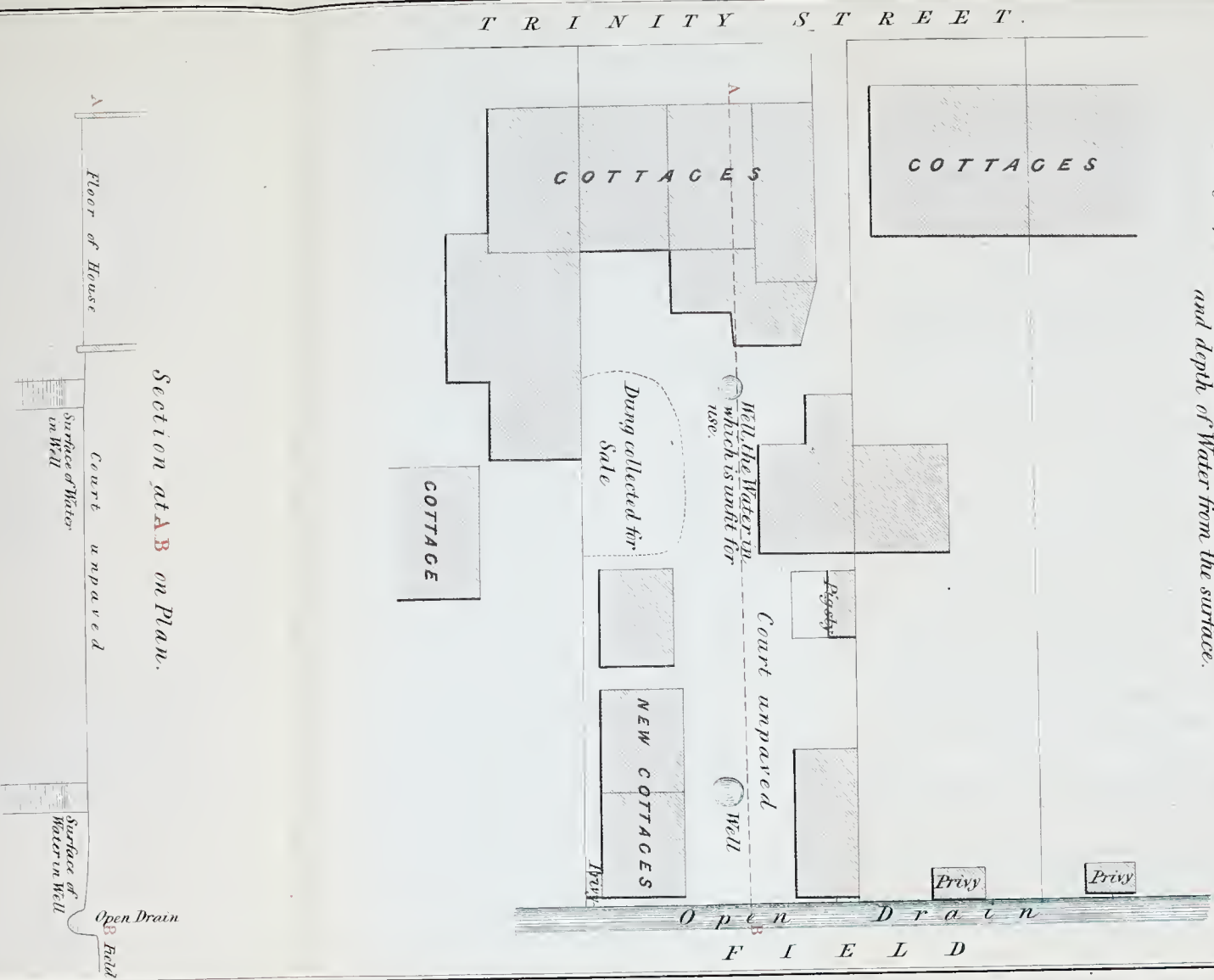
The Local Board may consist of five members, chosen as the Act directs.

#### REMEDIAL MEASURES PROPOSED.

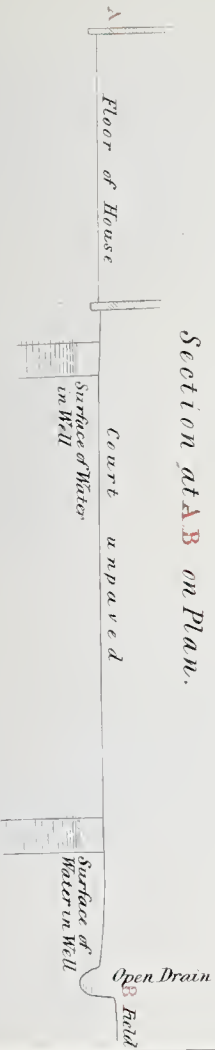
**WATER SUPPLY**—It is proposed to bring into the town and district a full supply of water, "fit and proper" for all domestic purposes. The chalk district will not yield a soft water; but, by making some of the large springs available, it is both softer and purer than private wells in the vicinity of a town crowded with middens, privies, cesspools, stagnant ditches, and open drains and gutters.

There are several springs near the town, at a low elevation,

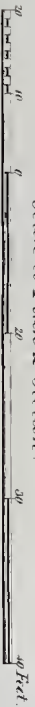
PART OF THE TOWN OF FAREHAM.  
Shewing open Ditch, open Dung-heap, Privies, Rysties, Cottages,  
and depth of Water from the surface.



Section at **A B** on Plan.



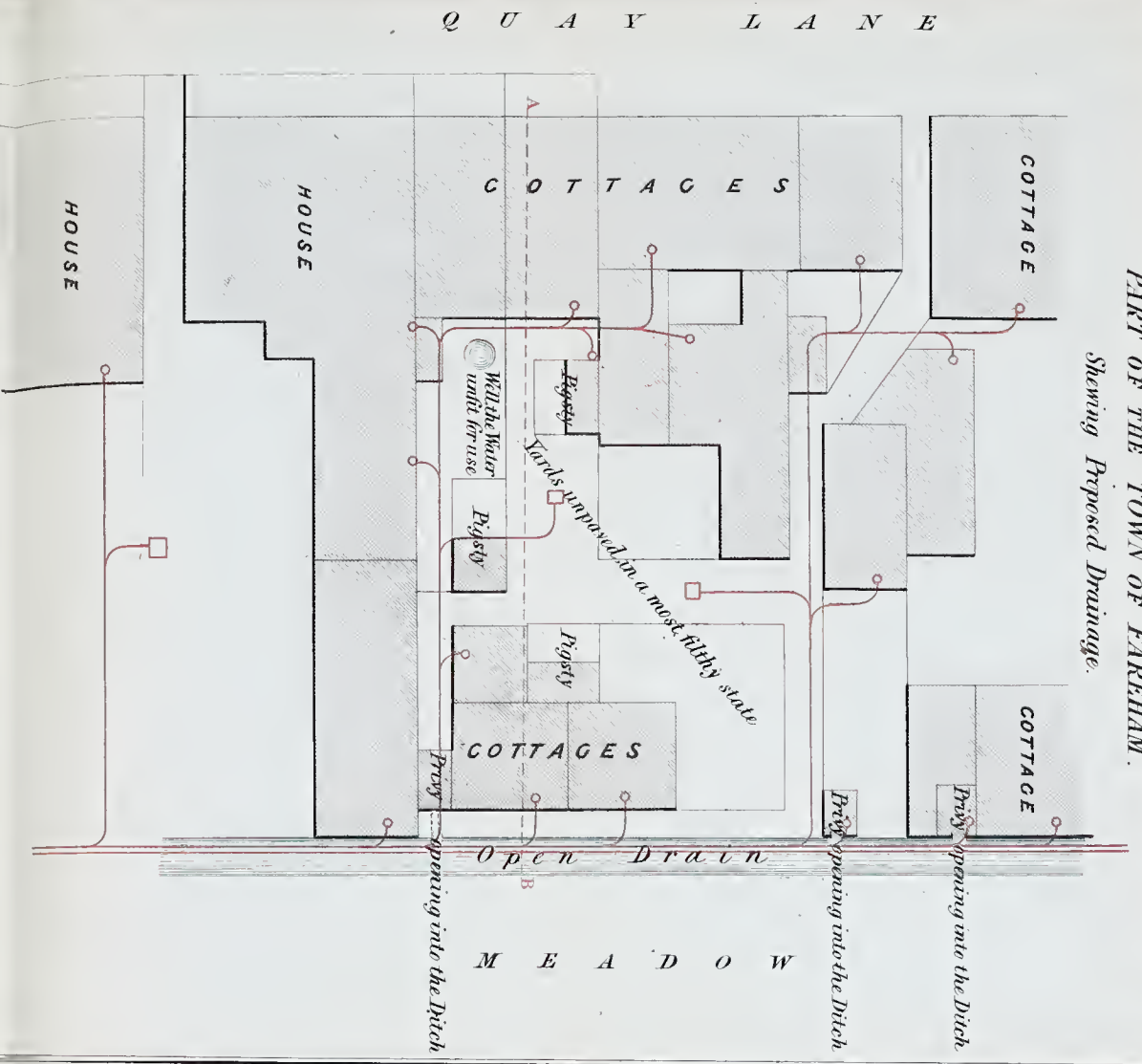
Scale to Plan & Section.







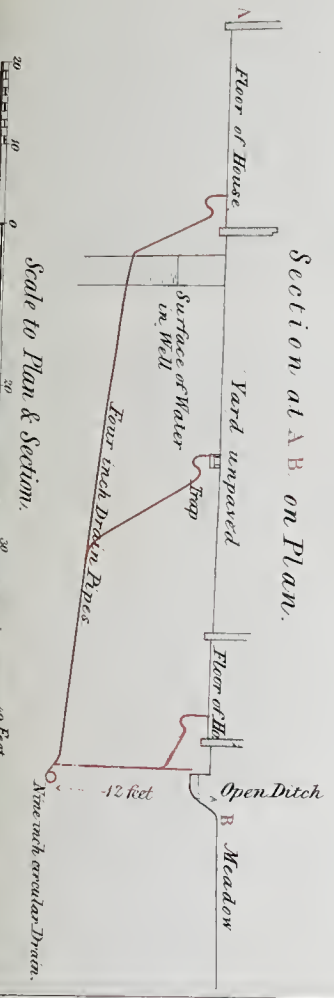
PART OF THE TOWN OF FAREHAM.  
Shewing Proposed Drainage.



*A B.* The Red Lines denote the Proposed Drains.  
 The Main Drain is nine inches diameter.  
 The Branches four inches diameter.  
 The Pigsties must be removed.  
 The Pines are to be converted into Water Closets.  
 The Yard Gates are shown square.  
 The Open Ditch to be abolished.

The House Drains are laid at such a depth as to allow of the same excavation being made use of for draining the land, this may be accomplished by a second pipe, or the usual means of filling the lower part of the excavation with broken stone, brick rubbish or cinders, may be resorted to.

Section at A B on Plan.







which may be made available by means of steam-power; but Fareham may be best supplied from the Bedhampton springs by the same engine-power and reservoir as will supply Portsmouth, Portsea, and Landport. The water will be delivered in the town under pressure capable of projecting a stream from the main over any house in the district. The system of supply will be "constant," and consequently each cottager will have "quantity" at command, which may be termed "unlimited," and at a cost to each cottage-tenant not exceeding  $1\frac{1}{2}d.$  per week.

At present, it is the practice in many places to have one "stand-pipe," or "tap," for a street, court, or several houses; but it will be more economical to let each cottager have a distinct and separate tap placed inside the house. This will prevent theft of the lead pipe and brass tap, guard them from the action of frost, save negligent waste in drawing, induce care of the apparatus, and give the readiest facility for use. It fixes responsibility, and prevents damage; it also removes one cause of idle gossip and quarrel.

Public stand-pipes, and watering troughs for cattle, may be erected for public and gratuitous use in such parts of the town as may be deemed advisable; a fountain, or fountains, may also be supplied for ornament and public use. Fire-plugs will be fixed on all the mains, which may also be used in dry weather for watering the roads, and washing streets, courts, and passages.

Water, under pressure, is found to be a most economical means of power, and may be applied to any of the uses of a port, such as working cranes, hoists, &c.

**STREET SEWERS AND HOUSE DRAINS.**—Each street must have its sewer, laid at such a depth as shall drain the foundations of the houses; surface grates, at properly-regulated intervals, will open, by means of trapped side-drains, into the sewers, and each court and house will have communication with the nearest sewer. In wide streets, two pipe sewers will be cheaper and more efficient than one laid down the centre of the road-way; and back-drainage, for blocks of houses, will frequently be found to have great advantages over front drainage, as the house-drains are brought nearer to the sewer, and they do not require to be carried under the floors of the house.

The whole of Fareham may be drained by means of tile-sewers or drain-pipes; and, as good fall for the flow of the sewage will be obtained, the work may be executed at a minimum outlay.

The sewers and drains will be laid of such size and capacity as shall enable them to carry off all the surface-drainage of the district with the waste water from the proposed supply, and the whole of the house and water-closet refuse. This will be conducted into tanks, from which it may be pumped out for use over

the adjoining land. These tanks may be situated on the margin of Fareham Lake, at the lowest point of the natural outfall; and suitable means must be provided to admit the flood-waters into the lake direct, which is now their natural course.

These drain-pipes may be made in the district, under the management and control of the Local Board should there be any difficulty found with contractors, and the General Board will furnish every information and assistance to establish a yard and machines for the manufacture of tile, and kilns on the most improved and economical principle in which to dry and burn them.

The prices estimated are extreme, as tile may be made much cheaper than those furnished by either the London or Staffordshire makers. Material and labour is estimated for.

The pipes are intended to be continuous, without a socket, but set fair end to end, and the smaller pipes will be secured by a wrapper of asphalted canvas, the larger one by an external jointing of tempered clay.

**APPLICATION OF LIQUID REFUSE.**—The quantity of available sewage due to a town such as Fareham, if calculated at twice the water supply, will be 116,800,000 gallons per annum, which, if used in the proportion of 18,000 gallons per acre per annum, as recommended by Mr. Smith of Deauston, will irrigate about 6,490 acres. Taking the average cost of guano and farm-yard manure at 2*l.* per acre, and deducting 12*s.* 9*d.*, the cost of the application of the sewer-water, there will appear a saving due to the sewer-water of 1*l.* 7*s.* 3*d.* per acre; allowing one-half as a bonus to the farmer, there will remain a free income due to the use of sewer-water of 4,421*l.* 6*s.* 3*d.* The full amount of income saved to the district being 8,842*l.* 12*s.* 6*d.*

This result is corroborated by Liebig and other chemists, who have estimated the value of town refuse.

It may be contended that the theoretical value of such material as town refuse is no test of the actual sums to be realized from its sale. This, in the first instance, may be true; but the margin is so wide as to allow of very large reductions, and yet leave an income sufficient to pay the interest of capital and working expenses, and the whole cost of the proposed works of improvement.

**WATER-CLOSETS.**—Water closets must supersede the present open privies and cesspools for houses of every class. They must be simple in their arrangement, and cheap in price. Each house must, as far as existing circumstances render it practicable, have its own convenience; public or common privies are generally a great nuisance, as the use of a privy depends upon its cleanliness, and this is very seldom attended to where more than one family frequent the same. But should the privy be kept in a fit state

for use, the liability of meeting, or being seen, prevents many females from using such as are exposed to the view of the surrounding property, or gradually begets an abandonment of feeling and want of shame. In the one case disease is generated through neglect, and in the other, the moral tone of the character is destroyed.

In most of the present arrangements no accommodation is provided for children, and hence much of the palpable filth and nuisance arises, which is found to exist on the surface of all back streets, courts, and passages. But the mischief does not terminate with childhood, as a carelessness of privacy is carried up from youth into maturer age.

I can state from personal observation, that as a rule, public privies are great public nuisances; they are converted into filthy pest-spots, and concentrate the seeds of disease instead of being the means of preserving health and cleanliness.

Water-closets may be constructed, simple in form, and at an original cost not exceeding 2*l.* for each cottage; or adding to the rental 2*s.* per annum, which will be less than one halfpenny per week. For this sum each cottage may have a private water-closet as convenient, comfortable, and clean as the wealthiest individual in the neighbourhood. The effect of such an arrangement cannot be calculated by its money-value, as the health, modesty, and morals of the people would be modified and improved. It must be taken as a stern truth, that self-respect is the foundation of all social order.

**DUST-BINS.**—Provision must be made for the temporary reception of ashes and other solid refuse which cannot be carried off by the underground drains; light iron boxes, square, or hexagonal in form, may be provided, which, with their contents, shall be removed full and an empty box left in exchange for use. The local Board will provide proper carts and boxes for this purpose, free of all cost to the tenants, as the refuse will be fully equal to the expense. The boxes are recommended to be hexagonal or square in form, and all of equal sectional dimensions, to enable them to pack together in the least space, and by being changed rather than emptied into the cart, an excess of dust will be prevented. The present plan of throwing a box of dry ashes over a cart side is an intolerable nuisance, especially if there be any wind at the time.

**PUBLIC CONVENIENCES.**—Proper public conveniences, urinals, &c. should be erected in situations least likely to be offensive to delicacy. Every town has such situations if they are made available for this purpose. Our railway stations are suggestive of the kind of convenience required in form, though not as to cost; in fact, such conveniences will more than pay the interest of money expended in their construction as the urine will pass off in the pipe drains for



use as liquid manure of the most valuable kind. Such conveniences have been erected in Manchester out of the general rates, and it may here be observed that there the ratepayers save an annual sum of 25,000*l.* by making their own gas alone, which sum is expended on town improvements, thereby doubling the benefit to the inhabitants.

**PUBLIC WASHHOUSES.**—As private washhouses cannot be attached to each cottage, public washhouses for the poor should be erected in all crowded districts, where accommodation for washing and drying clothes should be provided, with all the aid of steam apparatus and machinery; and this can be furnished at a cost which shall make the use of the establishment cheap to the poorest family, and be remunerative for the capital expended.

The misery and inconvenience of “washing-day” in a cottage has passed into a bye-word; want of room and proper convenience begets irritability of temper; this produces discord, and leads to family jars, which send the husband to seek comfort, or at least forgetfulness, in the pot-house.

**BATHS.**—When a full supply of water has been provided, baths, private and public, will become general; the form, arrangement, and size of private baths for the wealthy may be left to private enterprise; but as the poorer inhabitants can only use cheap structures, hints for their general arrangement may be useful.

Each cottage may have its own bath provided at a first cost, not exceeding 1*l.*, which, at 5 per cent., is a rental of 1*s.* per annum, or less than one farthing per week. The bath will be compact in form, and may be made of brown earthenware, either in one piece or in slabs, and jointed; there will be no extra cost for drainage or water supply beyond the connexions with the bath.

The situation for public baths should be pleasant and airy, the rooms should be well lighted and ventilated, and the walls formed with material not readily dirtied, and which, when so dirtied, may be soon cleansed. The walls may be constructed of hollow tiles, or hollow bricks, having, as recommended by Mr. Chadwick, an earthenware glaze on their inner face, the colour of which may be pleasingly varied; the floors may, with great advantage, be of the same tile, perforated, to allow the water to run freely off from the feet.

The furniture of the bath-rooms should be plain and simple; wood or cane-bottomed chairs, with fixed dressing-tables of slate, stone, or earthenware, should alone be used. One thousand gallons of water can be furnished for one penny, and this would afford 200 baths, allowing 50 gallons to each bath. The supply of

water, therefore, for each bath would not cost more than one two-hundredth part of a penny.

**FORMATION OF ROADS AND STREETS.**—The roads and streets of Fareham are at present formed principally of broken stone and gravel, and for such a town no material is more suitable if properly laid and attended to afterwards. The wear of a road or street does not depend so much upon the traffic over it as upon the state and condition in which it is kept. By regular watering in dry weather, and cleansing in wet weather, a saving to the extent of one-fourth in the material required for a neglected road may be made in the road itself; but the indirect saving can scarcely be calculated. On a smooth, even, and clean road, there is less wear to carriage springs and cart-wheels, to the shoes and clothes of pedestrians, and also to the door-mats and carpets in houses. Over an ill-formed and neglected road, the damage is two-fold; the wheel strikes forcibly the ridges, and drops with the force of a rammer into the hollows, which are soft and rotten with dirt and wet, so that the carriage is shaken and worn, and the road rapidly made worse through its own imperfections: those roads which generate most mud in wet weather produce the most dust in dry weather, and both are most destructive to comfort, as also to clothing. It is not too much to say that the inhabitants of any town ill-paved and cleansed pay an indirect rate by wear and damage to clothing far greater than the sum which would be required to keep the same in a state of perfect repair and cleanliness, if the sweeping machine which is used for cleansing Regent-street and other parts of the metropolis were employed.

**FOOT-WALKS AND CHANNELS.**—Foot-walks may be formed of flags, square-sets, bricks, tile, &c., whichever may be found most economical in the particular district. The surface channels may be laid with tile slightly concave on their upper surface; if the crown of the road is well cleansed, dirt will not be found to generate, and a few moments' use of the fire-hose will wash off all accidental refuse.

**PROPOSED BOUNDARY FOR THE PURPOSES OF THE ACT.**—The area for drainage must be regulated by the natural boundaries of the land, and will extend from the shore line to the ridge above Fareham, passing to the railway on one side, and embracing Wallington district on the opposite side; the upper and lower quay must be included. The proposed lines are shown fully on the map of the district.

TABLE of the ANNUAL HOUSE RENTAL of the TOWN of FAREHAM, including the WALLINGTON DISTRICT.

			£.	s.	d.		£.	s.	d.
1	house at annual rental not exceeding	240	0	0	each	240	0	0	
1	ditto	ditto	225	0	0	,,	225	0	0
5	houses at	ditto	150	0	0	,,	750	0	0
8	ditto	ditto	115	0	0	,,	920	0	0
2	ditto	ditto	95	0	0	,,	190	0	0
5	ditto	ditto	85	0	0	,,	425	0	0
8	ditto	ditto	75	0	0	,,	600	0	0
16	ditto	ditto	65	0	0	,,	1,040	0	0
21	ditto	ditto	55	0	0	,,	1,155	0	0
22	ditto	ditto	45	0	0	,,	990	0	0
25	ditto	ditto	35	0	0	,,	875	0	0
51	ditto	ditto	25	0	0	,,	1,275	0	0
136	ditto	ditto	15	0	0	,,	2,040	0	0
402	ditto	ditto	7	10	0	,,	3,015	0	0
111	ditto	ditto	2	10	0	,,	277	10	0
814		Annual rental					13,617	10	0

## ESTIMATE of SEWERS and DRAINS.

Area to be drained 289 Statute Acres at a cost of 2,611*l* 5*s*.

## ESTIMATE of HOUSE and YARD DRAINS with WATER-CLOSETS complete.

	£.		£.	s.	d.		£.	s.	d.
65	houses above 50 rental	. . . each	10	0	0	=	650	0	0
101	ditto	20 ditto . . . ,,	5	0	0	=	505	0	0
133	ditto	10 ditto . . . ,,	4	0	0	=	532	0	0
513	ditto under 10 ditto	. . . ,,	3	0	0	=	1,539	0	0
1	house and brewery	. . . . .	20	0	0	=	20	0	0
1	house and tan-yard	. . . . .	20	0	0	=	20	0	0
814		This charge to be paid by the owners	£	3,266	0	0			

*Working Expenses and Repairs.*

	£.	s.	d.
Superintendence and annual repairs	100	0	0
Add average of annual interest and redemption fund	250	0	0
Represents annual payment for 28 years	£350	0	0

or 1*7*/<sub>8</sub>*d.* per week rent-charge on 814 houses, if paid in full.*Estimate of Water Supply.*

8,800 lineal yards of 6-inch main at 5 <i>s</i> . 6 <i>d.</i>			
per yard	2,420	0	0
Service reservoir	580	0	0
	£3,000	0	0



*Cost of raising the Water from Bedhampton Springs, 200 feet, and use of Reservoir.*

160,000 gallons per day, or 58,400,000 per annum, at 1s. 6d. per 80,000 gallons	£.	s.	d.
£3,000 at 5 per cent. per annum	150	0	0
Superintendence, depreciation, and repair	100	0	0

Annual cost of water supply . . . £304 15 0

or 1¼d. per week rent-charge on 814 houses, if paid in full.

*Estimate of House Apparatus.*

65 houses above £50 rental each, 3l.	195	0	0
101 ,, 20 ,, 2l.	202	0	0
133 ,, 10 ,, 1l. 10s.	199	10	0
513 houses under 10 ,, 1l.	513	0	0
1 house and brewery	10	0	0
1 house and tan-yard	10	0	0

814 This charge to be paid by the owners £1,129 10 0

*Annual Charge of Rental for Apparatus for Water Supply and House-drains, by which the Owner would be remunerated for his Outlay.*

£.	s.		£.	s.	d.
1,129	10	Water apparatus at 5 per cent. per annum	56	9	6
3,266	0	House-drains and water-closets, complete	163	6	0
<u>£4,395 10</u>			<u>£219 15 6</u>		

£219 15s. 6d. is about 1½ per cent. annual charge on the rental of £13,617 10s., or 1¼d. per week rent-charge on 814 houses, if paid in full.

**ABSTRACT of COST and ANNUAL CHARGE for Sewers, House-drains and Water-closets, and Water Supply.**

	£.	s.	d.
Annual cost of water supply	304	15	0
Annual rent-charge, water-apparatus, and house-drains	219	15	6
Annual sewers and drains for 28 years	350	0	0
Total annual cost	<u>£874 10 6</u>		

£874 10s. 6d. per annum will amount to a rent-charge per week for 814 houses, for all purposes, of 4⅞d., if charged in full, and no credit is taken for large houses, manufactories, shipping, watering roads and streets, and other purposes, or not allowing any income to be derived from the refuse manure; and much of this charge would cease at the end of 28 years. The direct charge to cottage houses will not, however, exceed 1¼d. per week for a full water supply, and the same for sewers and water-closets; which will be reduced by any direct or indirect advantages derived from the refuse manure or water supply for other purposes than those named, and will also be decreased with an increase of population.

<i>Income from Water Supply, &amp;c., if charged as under.</i>				<i>Income at a Nett Charge, to meet the Outlay.</i>					
Houses.	£.	s.	d.	£.	s.	d.	£.	s.	d.
65 above £50 rental each,	2	0	0	130	0	0	1	10	0
101 ,, 20 ,,	1	0	0	101	0	0	0	15	0
133 ,, 10 ,,	0	12	0	79	16	0	0	10	0
513 under 10 ,,	0	6	0	153	18	0	0	4	4
1 house and brewery	10	0	0	10	0	0	10	0	0
1 house and tan-yard	10	0	0	10	0	0	10	0	0
Sundry manufactories	.	.	.	20	0	0	.	.	.
Supply to shipping and miscellaneous	.	.	.	50	0	0	.	.	.
				554	14	0			
Income from rate on sewers and drains, if charged as for water supply	.	.	.	554	14	0	.	.	.
				1,109	8	0			
Income from sewer refuse, 814 houses, at 10s. per house	.	.	.	407	0	0	Total income.	881	16
							Total annual cost	874	10
Total income from all sources	.	.	.	1,516	8	0	Balance of income at nett charges	7	5
Total annual income	.	.	.	1,516	8	0	The nett balance of income is		
Total annual expenditure	.	.	.	874	10	6	7l. 5s. 6d., charging each cottage one penny a-week rental for water supply, and one penny a-week rental for sewers, drains, and water-closets, and taking no credit for any income from refuse.		
Clear annual income	.	.	.	641	17	6			
At the end of 28 years, add interest no-longer chargeable	.	.	.	250	0	0			
Total income after that period	.	.	.	891	17	6			

These estimates must not be considered other than general, although they have been drawn up from a full examination of the district, and from such plans and sections as were furnished. Previous to the work being estimated for letting or commencing, correct surveys, sections and details must be made. I can however state that, from experience, I consider the expenditure for drainage and water supply may be kept within these estimates; and from the experience of practical chemists and eminent farmers, the income to be derived from liquid manure is much undercharged, as the refuse of a population has been variously estimated from 10s. to 30s. each person per annum. I have estimated it at 2s. per annum, or 10s. per house, taking the average population of each house at five individuals. But it must be noticed that the clear income exhibited leaves a very wide margin to work upon, as 641l. 17s. 6d. at 5 per cent. per annum represents a capital of 12,837l. 10s. And at the termination of 28 years there will cease the average annual payment of 250l., which must then be added to the account of income in aid of local rates for ever afterwards, or may be deducted from the water-rate.

The estimated water supply will give 100 gallons per day to each house, but the line of main will convey twice this quantity; thereby providing for a population double that at present in Fareham.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS.—I beg respectfully to bring the following summary under the notice of the General Board of Health for their consideration:—

1. That the town of Fareham is not so healthy as from its pleasant and open position it ought to be. That, in a great measure, this arises from the want of proper sewers and drains. That the stagnant ditches and open dung-heaps render the inhabitants liable to any epidemic disease whenever such unfortunately prevail.

2. That, according to the medical testimony, excess of disease and fever may be distinctly traced to this want of drainage, and to an imperfect and impure water supply; and that a low state of morality is ever attendant upon bad or imperfect sanitary regulations, as stated by the vicar.

3. That many grievous public and private nuisances exist, such as open and stagnant ditches, privies, and pigsties, in contact with dwelling-houses, exposed middens near open and shallow wells of water, and cesspools in confined yards and houses.

4. That the present churchyard burial-ground should be closed and another cemetery provided, as the town must be extended on that side and, consequently, in course of time, the churchyard will become surrounded with dwelling-houses.

5. That the health of the inhabitants would be improved, their comforts increased, and their moral condition raised:—

1. By a perfect system of street, court, yard, and house-drainage.
2. By a constant and cheap supply of pure water under pressure, laid on to every house and yard, to the entire superseding of all local wells and pumps, the water of which is impure.
3. By the substitution of water-closets or soil-pan apparatus (for the more expensive existing privies and cesspools), with proper drains to carry away all surface-water and refuse from the roofs, streets, yards, and water-closets.
4. By improved roads, properly paved courts and passages, and by a regular system of washing and cleansing all courts, passages, footpaths, and surface-channels.

6. That these improvements may be realized, independently of any advantage to be derived from the application of town refuse to agricultural purposes, at the rates per week for each house and labourer's cottage here stated:—

1. A full and complete system of street-sewers, house and yard-drains, with a water-closet or soil-pan, and yard-drain to each house, three-halfpence per week.
2. A constant high pressure supply of pure water laid on in each house, with a water-tap and waste-water sink to each house complete for three-halfpence a-week.
3. Complete and perfect pavement to all yards and courts, with proper surface-channels and grates, at one farthing a-week each house.



4. Washing, cleansing, and watering streets, courts, foot-walks, and surface-channels, at one farthing a-week each house.

7. That from the character of the soil in the neighbourhood of the town (chalk), sewage manure may be applied to the agricultural land with singular advantage, so as to increase its value to the farmer, and yield an income for the benefit and improvement of the town.

8. That these improvements will increase the health and comfort of all classes, and reduce the amount of poor's-rates.

9. That the direct charges stated will be the means of a direct and indirect saving to the inhabitants generally, but to the labouring man especially, of many times the amount to be paid.

10. That the outlay will not be burdensome or oppressive to any class of the community, as the capital required may be raised by loan, and the interest upon it reduced to an annual or weekly rent-charge. That almost the whole sum raised will be expended amongst the labouring population of the district, thereby giving relief to the poor man in the form of beneficial labour, as also means of improved health.

11. That the application of the Public Health Act to the town of Fareham, within the boundaries described, will be of the greatest benefit to the inhabitants.

Many advantages will accrue to the landowners, owners of property, and the inhabitants of Fareham generally which cannot be represented by a money value. The open and stagnant ditches which at present ramify the whole district, and pollute the atmosphere, breathed alike by rich and poor, will be entirely removed; open dung-heaps, exposed privies and cesspools will also be superseded. Every street, court, passage, and house will be drained; the cause of damp removed, and the surface of all roads, streets, lanes, and courts thoroughly and regularly cleansed. There will be a full and copious water-supply for all purposes, free from the contaminating influences of the present wells. There will be no pumps or cesspools to construct and repair, nor any nuisance or expense in removing, periodically, large accumulations of privy refuse. And as all experience shews the increase of health with improved sanitary regulations, typhus, diarrhœa and dysentery, hooping-cough, scarlatina, measles, small-pox, and other diseases will be reduced, if not entirely banished.

I have the honour to be,

My Lords and Gentlemen,

Your obedient Servant.

ROBERT RAWLINSON,

*Superintending Inspector.*